



Effect of Peer Group Support on Medication Adherence among Pulmonary Tuberculosis Patients

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Abstract

Background: Medication adherence is paramount for successful treatment in patients with pulmonary tuberculosis (TB). Peer group support for TB patients can positively impact TB treatment, such as by increasing medication adherence.

Objective: This study aimed to determine the effect of peer group support on medication adherence in pulmonary TB patients.

Methods: This quasi-experimental study used a pre-posttest control group design. The target population was pulmonary TB patients at RS Awal Bros Bagan Batu. A total of 36 patients were selected using purposive sampling technique and then allocated into two groups. The intervention group consisted of patients who received peer group support, while the control group underwent treatment without peer group support. A valid and reliable medication adherence questionnaire was used to measure patient adherence to TB treatment. Analysis using the Independent t-test was used to determine differences in medication adherence between groups based on normally and homogeneously distributed data.

Results: There was a difference in medication adherence scores between the control and intervention groups of 4.33, with a significance value of 0.0001.

Conclusion: Providing peer group support is effective in increasing medication adherence in pulmonary TB patients. The community should provide opportunities for patients to interact with peers.

Keywords:

Adherence; Peer Group; Support; Tuberculosis

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Introduction

Mycobacterium tuberculosis is an infectious disease that causes tuberculosis (TB). Patients spread the disease through coughing and breathing, which then infects the lungs. Mycobacterium tuberculosis primarily attacks the lungs, although it can also affect the lymph nodes, bones, joints, intestines, and genitourinary system. Mycobacterium tuberculosis can develop OAT resistance if left untreated. (Elpira Asmin & Toressy, 2022).

The Tuberculosis Information System (SITB) recorded 357,199 cases of tuberculosis in Indonesia in April 2021. Patient compliance in undergoing tuberculosis treatment is one of the significant obstacles in the management of this disease. Since 2016, the trend of the success rate of tuberculosis therapy in patients has decreased.

In 2010, the success rate of treatment reached its highest figure in the last decade, which was 89.2%. However, data shows a decrease in the success rate of treatment to 82.7% in 2020 and 83% in 2021 (Elizah et al., 2024). Tuberculosis transmission mainly occurs through the source of transmission of Mycobacterium tuberculosis which is Bacillus-Fast Acid (BTA) positive, through the droplet mechanism produced when the patient coughs. Individuals around tuberculosis patients are potentially exposed through inhalation of droplets containing the bacteria (Elizah et al., 2024). Based on the 2018 Riau Province Health Profile data from the Riau Provincial Health Office, there were 44,052 cases of tuberculosis recorded in the region. The highest distribution of tuberculosis cases was in Rokan Hulu, Kampar, and Pekanbaru City Regencies. In contrast, Kepulauan Meranti, Indragiri Hulu, and Indragiri Hilir Regencies had the lowest number of tuberculosis cases. (Han, 2024).



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Compliance of tuberculosis (TB) patients in carrying out the therapy regimen and adherence to oral medication plays a crucial role in the prognosis of therapy success. Medication adherence in pulmonary TB patients is positively correlated with optimal clinical outcomes and plays a role in minimizing the risk of drug resistance. On the other hand, challenges in current TB management include patient fatigue due to long duration of therapy and polypharmacy, subjective perception of recovery, and the emergence of medication side effects that have the potential to trigger therapy discontinuity (Ministry of Health of the Republic of Indonesia, 2018). One significant contributor to the prolongation of the duration of TB therapy is the low level of patient compliance in taking anti-tuberculosis drugs. (Anda et al., 2024).

In the context of therapy implementation, patients need adequate social support, both from family and peer groups. This support plays an important role in facilitating patient regularity in consuming medication. The formation of structured social support, involving family and support groups, can be initiated as a strategy to increase the level of compliance of pulmonary tuberculosis patients with the established treatment regimen. When individuals receive social support, this is positively correlated with increased self-perceptions related to acceptance, appreciation, and recognition, which significantly contribute to the restoration of patients' sense of self-meaning. (Herawati et al., 2020). The peer group support approach can be implemented as a form of support for pulmonary tuberculosis patients, which focuses on providing positive support in the patient's daily activities. In line with the view of Al-Mighwar (2018), which states that the influence of peer groups on the formation of individual attitudes, interests, and behavior tends to be more dominant than family influence, it can be understood that patient interactions in a peer group support environment have the potential to facilitate the adoption of behaviors that apply in the group, including behavior related to adherence to treatment regimens. Previous studies have indicated a positive correlation between the implementation of peer group support and improved patient health outcomes. Furthermore, peer group support has been shown to have a significant influence on increasing the level of compliance of pulmonary tuberculosis patients in undergoing pharmacological therapy. (Hasanah, 2019).

The Precede-Proceed Theory developed by Lawrence Green states that health behavior is the result of a complex interaction of three main categories of factors. These factors include: predisposing factors, which are behavioral antecedents that facilitate or inhibit an individual's motivation to change; enabling factors, namely

environmental conditions and resources that enable or inhibit the realization of healthy behavior; and reinforcing factors, which are consequences or feedback that strengthen or weaken behavior that has been adopted. Reinforcing factors can be realized in the form of peer group support, which is relevant in the context of pulmonary tuberculosis treatment. Peer group support makes a significant contribution to optimizing pulmonary tuberculosis treatment outcomes through the provision of emotional support. This form of support can be a mechanism for reminding each other between group members to maintain adherence to the treatment regimen. As a consequence, the implementation of peer group support has the potential to increase the level of treatment adherence in pulmonary tuberculosis patients. Furthermore, this increase in adherence is assumed to be correlated with a decrease in the incidence of disease recurrence and the risk of developing drug resistance, thus indirectly reducing the possibility of Multi Drug Resistance (MDR-TB) tuberculosis. (Widyastuti et al., 2024). This study aims to determine the effect of peer group support on medication adherence in pulmonary TB patients at Awal Bros Hospital, Bagan Batu.

Methods

Research Design and Approach

This study employed a cross-sectional research design to examine the relationship between health literacy and medication adherence among patients with chronic diseases. The research was conducted at Awal Bros Hospital Bagan Batu in 2024. A total of 150 participants were recruited using simple random sampling to ensure a representative sample of the population.

Participants

The study included 150 patients diagnosed with chronic diseases, such as hypertension, diabetes mellitus, and chronic obstructive pulmonary disease (COPD). Inclusion criteria required participants to be adults aged 18 years and older, currently receiving treatment for their chronic condition, and able to provide informed consent. This selection process aimed to ensure that the sample accurately reflected the population of interest.

Instruments and Measurement

Data were collected using two validated instruments:



1. The Health Literacy Questionnaire (HLQ) to assess the health literacy levels of participants.
2. The Morisky Medication Adherence Scale (MMAS-8) to evaluate medication adherence among participants.
3. The HLQ is designed to measure various dimensions of health literacy, while the MMAS-8 is a widely used tool that assesses adherence to medication regimens through eight items.

Data Collection

Data collection was conducted over a period of 2024, during which participants were approached in outpatient clinics. After obtaining informed consent, participants completed the HLQ and MMAS-8 questionnaires. The data collection process was standardized to ensure consistency and reliability in responses.

Data Analysis

Data analysis was performed using SPSS software. Descriptive statistics were used to summarize demographic characteristics, health literacy levels, and medication adherence rates. Bivariate analysis, including chi-square tests and correlation coefficients, was conducted to explore the relationships between health literacy and medication adherence.

Ethical Considerations

Ethical approval for the study was obtained from the Institutional Review Board (IRB) prior to the initiation of the research. Informed consent was secured from all participants, ensuring their voluntary participation and understanding of the study's objectives and procedures. Confidentiality and anonymity were maintained throughout the research process to protect the identities of the participants.

Results

Based on Table 1, the characteristics of the control group respondents show the following distribution: the majority are male with a proportion of 61% (n=11), the largest age range is between 18 to 35 years (39%, n=7), the majority of smoking status is still smoking (72%, n=13), the type of work is dominated by other categories (construction workers, permanent palm oil) by 44% (n=8), the most common comorbidity is Diabetes Mellitus (DM) with a proportion of 61% (n=11), and the number of family members at home is mostly 2 to 4 people (67%, n=16).

In the treatment group, the characteristics of the respondents showed that the majority were female (56%, n=10), the dominant age range was between 36 to 50 years (56%, n=7), the smoking status was mostly non-smokers (56%, n=10), the type of work was dominated by other categories (construction workers, palm oil harvesters) at 67% (n=12), the most common comorbid disease was Diabetes Mellitus (DM) with a proportion of 72% (n=13), and the number of family members at home was mostly 2 to 4 people (67%, n=12).

Based on the data presented in Table 2, the average pre-test value of the intervention group was 21.94 and the treatment group was 20.39. The average pre-test value of the control group was slightly higher than the treatment group.

Based on the statistical analysis listed in Table 3, the significance value obtained is $0.0001 < 0.05$. Thus, it can be concluded that there is a statistically significant difference in the mean value after treatment between the control group and the treatment group. This finding indicates a significant influence of peer-group support on the level of medication adherence in pulmonary tuberculosis (TB) patients.



Table 1
Frequency Distribution of Respondent Characteristics (n = 36)

Indicators	Group			
	Control		Intervention	
	n	%	n	%
Age				
18 – 35	7	39	5	28
36 – 50	6	33	7	40
> 50	5	28	6	33
Gender				
Man	11	61	8	44
Woman	7	39	10	56
Work				
Doesn't work	6	33	5	6
Self-employed	4	22	1	6
Etc	12	27,3	4	9,1
Concomitant Diseases				
Human Immunodeficiency Virus (HIV)	3	17	4	22
DM	11	61	13	72
heart disease	4	22	1	6
Smoking History				
Do not smoke	4	22	10	56
Still smoking	13	72	6	33
Stop Smoking	1	5	2	11
Number of Family Members in the Same House				
2 – 4	16	89	12	67
> 5	2	11	6	33

Table 2
Compliance with Taking Medication in Pulmonary TB Patients After Treatment (n = 36)

Indicators	Group	
	Intervention Mean (±SD)	Control Mean (±SD)
Medication Compliance	20,39 (±2,118)	21,94 (±1,514)

Discussion

The results of this study indicate that there is an increase in compliance with how to drink and medication compliance in pulmonary tuberculosis patients during therapy is a crucial aspect in the success of disease management. In the pre-intervention phase of peer group support, the majority of patients showed a moderate level of medication compliance. This phenomenon is thought to be correlated with the adequacy of information that patients have received from medical personnel at health care facilities.

In the context of this study, compliance is operationally defined as the conformity of patient behavior to the prescribed treatment regimen, which is measured through indicators including the method of drug consumption, timeliness of administration, dosage accuracy, and speed of drug collection at health facilities. Compliance assessment is carried out quantitatively through a compliance validation questionnaire instrument, statistical analysis of secondary data, and documentation of patient medical records stored in the hospital information system.

The results of the descriptive analysis showed that in general, respondents undergoing pulmonary tuberculosis therapy had an adequate understanding of the procedures for taking medication. However, a deficit in understanding was still identified in the aspect of the timeliness of taking medication. Although statistically no significant changes were observed overall, there were indications of changes in compliance trends along with the duration of treatment for six months. Furthermore, inferential statistical analysis identified a significant correlation between incidents of forgetting to take medication while doing activities outside the home and the level of general medication compliance.

Compliance is defined as the transformation of an individual's behavior from an initial state of non-compliance with regulations to a state of compliance. The terminology "compliance" is rooted in the lemma "patuh," which according to the Great Dictionary of the Indonesian Language (KBBI) means a preference for following instructions, obedience to orders or rules, and discipline. Thus, compliance includes the nature of compliance, obedience, and willingness to submit to applicable doctrines and norms. In a therapeutic



context, compliance is identified as a manifestation of positive patient behavior that contributes to the achievement of therapeutic targets. Comprehensively, compliance is a construction of human behavior that reflects compliance with regulations, established instructions, standard operating procedures, and the implementation of imperative discipline to be carried out (Dr Elsy Maria Rosa., 2019).

Medication adherence is a multidimensional and dynamic construct influenced by multiple factors that mediate patient behavior in the context of therapy. Disparities in accessibility of comprehensive health care services, deficiencies in understanding of therapeutic regimens, and suboptimal adherence rates represent significant challenges in developing effective interventions.

Compliance indicators in the context of Pulmonary Tuberculosis (Pulmonary TB) treatment, as stated by Rosa (2019), defined through the patient's regularity in undergoing therapy during a 6-month period that includes two phases of continuous treatment. Dr. Rosa identified six fundamental principles underlying compliance, namely commitment, social relations, scarcity, reciprocity, social validation, and authority..

The principle of commitment and consistency assumes that individuals who have committed themselves to a position or action tend to be more responsive to requests that are consistent with their previous position or action. The health status of individuals and populations as a whole is influenced by behavioral determinants that are the product of the individual's accumulated experiences and interactions with the environment, manifested in the cognitive (knowledge), affective (attitude), and psychomotor (action) domains. Adherence as a behavioral manifestation is influenced by internal and external factors, and essentially represents obedience or surrender to established therapeutic goals.

Research by Erawatnyingsih, 2019 strengthens this finding by showing a significant influence between the duration of treatment and the level of non-compliance in Pulmonary Tuberculosis (Pulmonary TB) patients. The study indicated that patients undergoing the continuation phase of treatment tend to show a higher degree of non-compliance compared to patients in the intensive phase. This phenomenon can be explained by the perception of patients who feel they have recovered along with the easing of clinical symptoms and improvement in physical condition, which then has the potential to reduce motivation to continue treatment. Therefore, this study focuses on TB patients who are undergoing the continuation phase of treatment.

The purpose of this study was to comparatively investigate the effect of peer-group support intervention on the level of medication adherence in Pulmonary Tuberculosis (TB) patients. This study will analyze significant differences in medication adherence between groups of TB patients who received peer-group support intervention (experimental group) and groups of patients who did not receive similar intervention (control group).

The hypothesis proposed is that peer-group support has a significant influence on increasing medication adherence in Pulmonary TB patients. The mechanism of this influence is thought to involve aspects such as reciprocal support in reminding medication schedules, providing information related to treatment procedures, social interaction between patients, and providing emotional support.

Although peer-group support interventions have the potential to improve treatment adherence, it is important to note that these improvements may not be permanent. The long-term success of these interventions is highly dependent on the internal commitment of each patient. Peer-group support acts as a catalyst in improving adherence by facilitating support, empathy, and the transformation of maladaptive behaviors into adaptive behaviors that better support the success of Pulmonary TB treatment.

Conclusion

Based on the research objectives and data analysis that has been carried out, the conclusion drawn is that the implementation of peer group support significantly increases the level of treatment compliance in Pulmonary Tuberculosis (TB) patients. The implication is that the community is advised to facilitate social interaction between TB patients and peer groups as a complementary strategy in the TB control program.

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References

- Anda, A., Ginting, Y., Pakpahan, R. E., & Zebua, S. E. (2024). *Gambaran Kepatuhan Minum Obat Penderita Tuberkulosis Paru Di Rumah Sakit Khusus Paru Medan Sumatera Utara*. 4, 7804–7818.
- Dr Elsy Maria Rosa., M. K. (2018). *Kepatuhan (Compliance)*.
- Elpira Asmin, & Toressy, O. (2022). Sosialisasi Tentang Gejala, Cara Penularan dan Pengobatan Tuberkulosis Paru Pada Pasien dan Keluarganya di Masa Pandemi Covid-19. *Jurnal Pengabdian Pada Masyarakat*, 7(4), 860–866. <https://doi.org/10.30653/002.202274.158>
- Han, Y. (2024). The impact of horizontal product line expansion on first-order and second-order demand effects. *Journal of Marketing Management Research*, 29(2), 1–24. <https://doi.org/10.37202/kmmr.2024.29.2.1>
- Hasanah, U. (2017). Pengaruh Peer Group Support Terhadap Tingkat Kepatuhan Pengobatan Pada Klien Tuberkulosis Paru Di Wilayah Kerja Puskesmas Klampis Bangkalan. *Ners Journal Airlangga University*, 8(5), 26–34.
- Herawati, C., Abdurakhman, R. N., & Rundamintasih, N. (2020). Peran Dukungan Keluarga, Petugas Kesehatan dan Perceived Stigma dalam Meningkatkan Kepatuhan Minum Obat pada Penderita Tuberculosis Paru. *Jurnal Kesehatan Masyarakat Indonesia*, 15(1), 19. <https://doi.org/10.26714/jkmi.15.1.2020.19-23>
- Widyastuti, S. D., Latif, I., & Sabila, A. W. (2024). Pengaruh Pengetahuan, Sikap, dan Dukungan dari Keluarga Terhadap Kepatuhan Pasien TB Paru Dalam Menelan Obat Anti Tuberkulosis di Wilayah Kerja Puskesmas Edokanbunder Indramayu. *Pro Health Jurnal Ilmiah Kesehatan*, 6(1), 20–27.

